UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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July 1, 2014

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Infrastructure, Strategy and Analysis
201 12th Street South
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Arlington, VA 22202

Joint Guam Program Office Forward
P.O. 153246
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Subject: EPA comments on the Draft Supplemental Environmental Impact Statement (DSEIS) for the Guam and Commonwealth of the Northern Mariana Islands (CNMI) Relocation (2012 Roadmap Adjustments), Guam (CEQ# 20140118)

Dear Mr. Ludovici:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. EPA is a cooperating agency on the project EIS and has worked closely with the Department of Defense (DoD) to review and comment on the project since 2007. On February 17, 2010, EPA rated the original Draft EIS for the military relocation "Environmentally Unsatisfactory – Inadequate" (EU-3), based, in part, on the projected unsatisfactory impacts to Guam's existing substandard drinking water and wastewater infrastructure, and the associated potentially significant adverse impacts to public health. Since then, the scale of the proposed military relocation has been reduced. On November 12, 2013, we provided comments to DoD on the Preliminary DSEIS. We appreciate the changes made to the document to address some of our comments.

Based on our review of the DSEIS, we have rated the preferred alternatives as Environmental Concerns, Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions"). Although the reduction in size of the military buildup has substantially reduced the project's expected impacts to water and wastewater utilities, the reduced project would still significantly impact one aquifer sub-basin and contribute wastewater flows to Guam Waterworks Authority (GWA) wastewater treatment plants that are currently operating in non-compliance with their existing Clean Water Act discharge permits. GWA's Northern District Wastewater Treatment Plant (NDWWTP) would receive a 53% increase in average baseline flows as a result of the project.

The DSEIS indicates that funding to upgrade civilian water and wastewater utilities impacted by the project has been appropriated (specifically, the appropriation of $106,400,000 from the FY2014 Consolidated Appropriations Act) and that impacts, including those to the NDWWTP, are mitigable.

We greatly appreciate the efforts that DoD has made to obtain this funding, as it is crucial to ensure the significant impacts to the NDWWTP are addressed. Our rating of EC-2 is based on the expected availability of this or equivalent funding for the needed upgrades to the NDWWTP. EPA would consider it unacceptable for DoD to place the burden of addressing project-related increases in wastewater on GWA. If adequate funding is not made available for this purpose and the project's impact burden would fall on GWA alone, EPA would have objections to the proposed action, and may find it environmentally unsatisfactory (see enclosed "Summary of Rating Definitions"). GWA is ill-equipped financially to accommodate the additional project flows while currently pursuing compliance with its discharge permits. Adding a substantial flow to any of GWA's existing wastewater treatment systems would exacerbate an already significant water quality problem caused by inadequate treatment of sewage, and increase the potential human health and environmental risk associated with those facilities operating in noncompliance. We will continue to work with DoD and the other stakeholders on these issues and to provide technical assistance, where needed. Our enclosed comments request additional information regarding impacts to the wastewater collection system.

Our EC-2 rating also reflects our concerns regarding the potential impacts to the Northern Guam Lens Aquifer (NGLA) drinking water supply and the future management of the NGLA. The DSEIS acknowledges significant impacts to one aquifer sub-basin from seawater intrusion, and proposes mitigation that relies on clear, coordinated, and sufficiently funded, multi-party NGLA management. The DSEIS does not describe such an organized and funded management scenario, and the multiple deficiencies identified in GWA's drinking water system further complicate the situation. Climate change effects also could contribute to increased salinity in the aquifer over time. To address these uncertainties and the significant impact to the aquifer sub-basin, DoD should prepare an adaptive management strategy to provide guidance for managing the aquifer and addressing impacts that future monitoring might reveal once project groundwater pumping begins. We recommend that DoD contribute funding for the needed additions to the monitoring network and provide technical and financial assistance to the Guam Environmental Protection Agency to ensure the multi-party NGLA management stakeholders group is prepared and has the necessary leadership and organizational capability to collectively manage the aquifer.

Finally, the preferred alternatives for the main cantonment and live-fire training range (LFTR) would result in substantial deforestation and significant impacts to terrestrial biological resources, which have already experienced a serious decline in health on Guam. We encourage DoD to seek out additional ways to avoid loss of limestone forest, which is vital for Guam's federally-listed threatened and endangered species and the health of the NGLA. Because of the magnitude of these impacts, and the fact that some of the project footprint would remove areas serving as mitigation for previous DoD impacts elsewhere, we believe that a more substantial mitigation proposal is warranted, and urge DoD to continue to work with the U.S. Fish and Wildlife Service towards this end. The proposed large-scale deforestation would also require a more developed system to manage the large quantities of green waste than is presented in the DSEIS.

We appreciate DoD's continued good faith efforts to work closely with EPA on the modified buildup and we look forward to our continued coordination with DoD, the Government of Guam, and other

federal agencies in this endeavor. If you have any questions, please contact me at (415) 972-3854, or contact Karen Vitulano, the lead reviewer for this project, at 415-947-4178 or vitulano.karen@epa.gov.

Sincerely,

Kathleen H. Johnson, Director
Enforcement Division

Enclosures: Summary of EPA Rating Definitions
EPA's Detailed Comments

cc: J. Dan Cecchini, Joint Guam Program Office
Earl Campbell, U.S. Fish and Wildlife Service
Mark Calvo, Director, Guam Military Buildup Office
Eric Palacios, Guam Environmental Protection Agency
Martin Roush, Guam Waterworks Authority

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

Category "1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category "2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category "3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

Wastewater

Impacts to the Northern District Wastewater Treatment Plant

The DSEIS notes that the proposed action would result in an estimated 53% increase in the average baseline flows to the Northern District Wastewater Treatment Plant (NDWWTP) by 2028 (p. 4-108). It adequately characterizes the state of noncompliance of this facility, and the fact that contributing additional flows to this facility would be a significant impact until Guam Waterworks Authority (GWA) achieves compliance with the secondary treatment standards stipulated under its National Pollutant Discharge Eliminate System (NPDES) permit. The DSEIS also discloses the less substantial increased flows to the other wastewater treatment plants that would occur as a result of civilian population growth associated with the buildup and that those facilities are also out of compliance with their NPDES permits.

To mitigate the significant impact to the NDWWTP, the DSEIS states that DoD would assist GWA in locating funding from federal agencies and others, and references the Economic Adjustment Committee (EAC) set up by the Secretary of Defense to address assistance to support public infrastructure requirements. In addition, the Consolidated Appropriations Act appropriated over $106M for civilian water and wastewater improvements on Guam (p. 4-108). This funding is crucial to ensure that the impacts to the NDWWTP from the buildup are addressed. If this funding is unavailable for NDWWTP upgrades, then the significant impacts from the additional wastewater flows that would occur as a result of the project would be unmitigated. Given the financial and resource constraints that exist for Guam, it is unrealistic to anticipate that GWA could, on its own, accommodate the increased project flows in a manner compliant with environmental standards.

The DSEIS discloses the increased indirect wastewater flows to the Agana WWTP that would be generated by the temporary construction workforce and induced civilian population, and concludes that the impacts would be less than significant since the additional flows would be minor. However, the impact assessment criteria in the DSEIS include: "*if a utility would operate within the design and capacity of its systems with the additional estimated demands of the proposed action, but is expected to be operating in violation of its regulatory requirements when the proposed action would occur, there would be a determination of significant adverse impact"*. (p. 3-97). We are aware that DoD has requested additional funding to support other wastewater infrastructure improvements, and appreciate DoD's efforts to support the necessary upgrades to avoid significant impacts to public health and water resources from the project.

> *Recommendation:* The FSEIS should identify measures DoD would take to ensure GWA's NDWWTP would meet the requirements of its current NPDES permits before it receives additional flows from the project. Include any updates regarding the status of the requested additional funding, as well as the use of the $106M for NDWWTP, in the FSEIS.
>
> Consistent with the impact assessment criteria identified in the DSEIS, identify the increase in flows to Agana WWTP as significant.

Impacts to the GWA wastewater collection system

The DSEIS evaluates the capacity of the wastewater collection system to receive the additional flows from the Proposed Action and includes a new relief sewer to convey additional wastewater flow to the main GWA sewer along Route 3. With this, it concludes that the GWA interceptor sewer along Routes 3 and 9 would have adequate capacity to convey flows higher than those projected for the proposed action, and that off-base improvements to the GWA collection system are not required for the preferred alternative (p. 4-108). This assessment does not indicate the basis for this statement nor identify documentation showing adequate condition of the GWA sewer lines. In addition, the DSEIS does not evaluate other aspects of the collection system, including the condition of pump stations and manholes.

The DSEIS also does not consider the environmental impacts of the additional flows to the GWA collection system. It identifies the deficiencies of the GWA wastewater collection system, as revealed in EPA's National Enforcement Investigations Center (NEIC) report, including the aged and deteriorated sewer pipes that are subject to excessive infiltration and inflow resulting in sewage spills and operational problems at the WWTPs, and the number of spills from GWA's sewage collection system that greatly exceed spill rate norms for similar wastewater systems (p. 4-100). While it states that GWA is proceeding with capital improvement projects to replace and rehabilitate the collection system, it acknowledges that improvements to the operation and maintenance of the existing GWA wastewater infrastructure are in the initial stages and require several years and significant funding to achieve full compliance. Until this occurs, increases in flows could result in increases in sanitary sewer overflows. This pollutant source is not identified in the groundwater impact discussion.

> *Recommendation:* Provide additional information in the FEIS regarding the condition assessment of the GWA sewer lines. Discuss the condition of pump stations and manholes. Estimate the potential for increased SSOs from the increase in flows through the deficient GWA collection system. Include the estimated timeline for improvements and how that correlates with the project schedule. Impacts to groundwater quality from this source should be evaluated and disclosed.

WWTP Capacities

The WWTP capacity evaluation in the DSEIS concludes that both Northern District and Agana WWTPs have the ability to treat wastewater to primary treatment standards up to 9 MGD and 12 MGD respectively (p. 4-101 and 4-102). No information or references are included to support these estimates.

In addition, it appears there is an error in the comment regarding Table 4.1.14-1 where the DSEIS states, "*About 36% of the estimated increase in wastewater flow from the baseline is attributable to direct and indirect effects from the proposed action*." Based on the data in the table, we believe that this statement should be revised to say that "about 69% of estimated increase in wastewater flow from the baseline is attributable to direct and indirect effects from the proposed action."[1]

> *Recommendation:* Provide the basis for the conclusions regarding WWTP capacities in the FEIS or in an appendix. Correct the statements regarding flow increases in relation to Table 4.1.14-1.

[1] Estimated increase consists of Direct Flow (1.23), Indirect flow (0.61), Guam Civilian Growth (0.84) totaling 2.68. Direct plus indirect: (1.23 +0.61 = 1.84) represents 69% of the total increase of 2.68.

Drinking Water and the Northern Guam Lens Aquifer

Management of the NGLA, the Drinking Water System, and Mitigation

The Northern Guam Len Aquifer (NGLA) has been designated as a Sole Source Aquifer under the Safe Drinking Water Act. The DEIS states that the impacts to the NGLA from the extraction of the 1.7 million gallons per day (MGd) of potable water that would be needed for the preferred alternative would be less than significant for the overall NGLA, but would cause short-term, localized significant impacts to the Finegayan sub-basin (p. 4-20). According to the U.S. Geological Survey Study[2], increased withdrawal may result in higher levels of chloride concentrations in the Finegayan sub-basin, but the DSEIS states that, by redistributing withdrawal rates among the extraction wells, it *could* be possible to meet the water demands and maintain acceptable salinities over all existing and proposed Guam Waterworks Authority (GWA) and DoD wells (emphasis ours). The DSEIS identifies potential mitigation for the localized significant impacts: DoD would, as appropriate, implement enhanced water conservation measures, improve existing water systems to reduce system leaks, adjust pumping rates at DoD wells, use existing wells, and/or increase the use of surface water from Fena Reservoir to reduce withdrawals from the NGLA. The DSEIS also states that DoD could provide additional water production capacity to GWA, if requested, to assist GWA in meeting the increased demand while GWA makes improvements to its system (p. 4-105). We have the following questions and concerns:

Roles and resources for agencies managing the NGLA

The U.S. Geological Survey (USGS) model has limitations due to uncertainties regarding the actual conditions within the aquifer; therefore, the actual capacity numbers could be very different from the model results. The DSEIS states that DoD supports the USGS recommendations for rehabilitation and expansion of the hydrologic data collection network and monitoring, as well as identifying possible funding solutions and the role DoD would play in these processes. Because of the importance of additional data collection for managing the NGLA, EPA is concerned by the current lack of clarity regarding DoD's role and definitive funding sources for the monitoring network. Additionally, the roles of the various agencies tasked with managing the NGLA and potable water supply are unclear. The DSEIS notes that the Guam Water Resource Development Group meets regularly to manage the aquifer, and consists of DoD, Guam Environmental Protection Agency, GWA, Consolidated Commission on Utilities, Guam Department of Public Works, and the University of Guam's Water and Environmental Research Institute (WERI). The DSEIS does not identify USGS as a member of this group, yet it states that the USGS and WERI would conduct periodic monitoring of the aquifer groundwater chemistry to optimize the system and adjust pumping rates if chloride levels show an increase (p. 4-106). The decision-making roles of the agencies are poorly defined. For example, it is unclear who would adjust pumping rates. The 2012 National Enforcement Investigations Center (NEIC) inspection of the GWA public water system revealed a lack of understanding of the whole system by the operators, and a lack of standard operating procedures, among other deficiencies. These deficiencies must be addressed for the type of coordinated management identified in the DSEIS to occur. Additionally, despite the limitations and uncertainties identified, a clear adaptive management strategy is not presented.

Shifting water among basins

While GWA may be able to shift water around its distribution system on a small scale, depending on the extent of the increased chloride levels, it is not clear whether GWA has confirmed its ability to shift water across the island, if necessary, nor whether DoD would also have a role in shifting water. The

[2] USGS 2013c. *The Effects of Withdrawals and Drought on Groundwater Availability in the Northern Guam Lens Aquifer, Guam*: U.S. Geological Survey Scientific Investigations Report 2013-5216. http://pubs.usgs.gov/sir/2013/5216/.

DSEIS does not discuss the likely impacts that shifting water across the island, if it is possible to do so, would have on the sub-basins supplying the water.

Potential mitigation

The predicted amount of groundwater (1.7 MGd) to be extracted is less than that predicted in the Preliminary DSEIS (2.1 MGd), which EPA reviewed in late 2013. It is not clear whether water conservation or other mitigation measures identified above to conserve water have already been factored into this latest estimate. Regarding the provision of additional water production to GWA if requested, the mechanism for doing this is not identified, nor is it clear at what cost this could be accomplished. We are aware that GWA is trying to reduce purchases of DoD water because it's much more expensive than producing its own water.

> *Recommendations:* Identify the roles of the member agencies in the Guam Water Resource Development Group, including that of DoD, and explain how rehabilitation and expansion of the monitoring network could be funded, including the likelihood of this occurring. Prepare an adaptive management strategy that anticipates potential outcomes and provides guidance for managing the aquifer once project pumping has begun and should monitoring reveal greater impacts than predicted. This should include potential actions that could be taken if salinities cannot be reduced. Discuss probable effectiveness of the shared management scenario and how identified deficiencies in the public water system could influence this effectiveness. We recommend that DoD contribute funding for the needed additions to the monitoring network and provide technical and financial assistance to the Guam Environmental Protection Agency to ensure the multi-party NGLA management stakeholders group is prepared and has the necessary leadership and organizational capability to collectively manage the aquifer.
>
> Discuss logistics of shifting water and the potential impacts to other basins, should this be necessary. Identify the mechanism for providing GWA with water and whether there would be a cost. Clarify the reduced potable water consumption estimate and whether water conservation, leak detection measures, etc., have already been implemented.
>
> Consider combining all monitoring and management plans (monitoring, adaptive management, wellhead protection, Low Impact Development) into a single groundwater management plan that would not only cover pumping rates and chloride levels, but the entire suite of groundwater protection mitigation measures and BMPs to ensure their continuing operation, maintenance, monitoring, and effectiveness in protecting the aquifer. This plan should include a reporting mechanism so post-construction impacts can be disclosed to interested parties.

Wellhead Protection Zones

The preferred main cantonment alternative is proximate to the wellhead protection area of seven existing production wells at Finegayan. The DSEIS states that some of these wells may need to be relocated or abandoned, or their continued use negotiated with GEPA due to the potential for groundwater contamination, and that these actions would be done in accordance with GEPA regulations (p. 4-14).

> *Recommendation:* The FSEIS should identify which wells would likely need to be abandoned or relocated. We recommend that development in wellhead protection zones be avoided and that DoD pursue avoidance by increasing density and adjusting the project footprint as necessary. Include additional discussion of the impacts associated with potential development in wellhead

protection zones and how groundwater would be protected if this occurred. All mitigation should be included in a project-specific Wellhead Protection Plan.

Potential contamination of groundwater from munitions at the Live Fire Training Range (LFTR)
In our comments on the Preliminary DSEIS, we expressed concerns regarding potential contamination from munitions use at the firing ranges for the preferred alternative 5, which locates the live-firing ranges above the NGLA. We recommended that the "periodic Range Environmental Vulnerability Assessments" (REVA) be preceded by baseline monitoring, especially considering that the proposed Multi-purpose Machine Gun range location includes an active contaminated Military Munitions Response Program site (Site 52-UXO 4A MRA254 Burn and Dump Site -AOC-94) and it would be important to capture any groundwater contamination from this site for baseline inputs to the REVA.

We are pleased that the DSEIS states that, prior to the construction of the range, a site survey would be conducted, including installation of four wells; groundwater sampling would occur to provide actual data on the depth, flow direction(s) and quality of water present; and this information would be provided to the REVA program (p. 5-314). For active training ranges, in general, we have observed that DoD does not typically verify its REVA model results with actual sampling and monitoring, even when the results of the model exceed the REVA trigger levels. Because of the importance of the NGLA and the permeability of soils overlaying it, this practice would not be acceptable for this site.

The DSEIS discloses that lead ammunition would be used and that lead and other heavy metals, including nickel, chromium, cadmium, and copper, tend to accumulate in soils at training ranges, but are not very soluble (p. 5-83). The DSEIS mentions other munitions constituents, but does not identify these compounds nor discuss their solubility or threat to drinking water in the NGLA.

The DSEIS states that site-specific data will be used to determine the frequency of monitoring and range clearance, and that programmatic guidance recommends monitoring and clearance every 5 years.

Recommendations: We strongly recommend, in addition to baseline monitoring, that fate and transport modeling be conducted, using a model that is created for the site-specific soil and permeability parameters present at the firing range site, and that regular contaminant/groundwater monitoring be conducted at the ranges to update the model.

Discuss, in the FEIS, the munitions constituents that would be associated with the munitions used at the LFTR and the solubility and leaching potential of each in onsite soils. Identify which constituents would be modeled, sampled and monitored during the operations phase.

Regarding range clearance, DoD should consider the vulnerability of the sole-source aquifer, including pathways to groundwater that exist from the karst geology and the presence of sinkholes at the site of the preferred LFTR alternative, and develop a robust plan to conduct range cleaning at a greater frequency than generally occurs at mainland training ranges (5 years). In addition, DoD should implement BMP effectiveness monitoring to ensure that BMPs are operating as intended and are not leaching pollutants. Because of the vulnerability of the NGLA, additional BMPs that could limit migration of contaminants should be explored, such as Passive Reactive Berm technology[3] and the use of sorbents and biostimulants[4].

3 http://www.serdp.org/Program-Areas/Environmental-Restoration/Contaminants-on-Ranges/Protecting-Groundwater-Resources/ER-200406
4 http://www.serdp.org/Program-Areas/Environmental-Restoration/Contaminants-on-Ranges/Protecting-Groundwater-

Stormwater

Stormwater Pollution and Management

We appreciate the information in the DSEIS regarding the Low Impact Development (LID) plans for the project's main cantonment, which includes references to LID studies, appendices with conceptual designs, and a listing of LID goals (p. 4-16). It also includes DoD's commitment to follow EPA's "Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act" (p. 4-16). Because of the karst environment at the main cantonment site, monitoring the effectiveness of LID features is critical. The DSEIS states that, ultimately, a field monitoring program for pollutant removal efficiency would be implemented under the Stormwater Pollution Prevention Program and Stormwater Management Plan (SWMP) to measure the success of meeting pollutant removal requirements and to modify water quality treatment strategies and BMPs, as necessary (p. 4-18). While the Best Management Practices in the DSEIS identify the LID Plan, a SWMP is not listed.

Recommendation: We recommend the development and implementation of an LID Monitoring Effectiveness Plan. The purpose of the plan would be to make certain the appropriate LID measures are designed/sited, maintained, monitored, and effective during the operations phase. As recommended above in our groundwater comment, this plan could be part of a larger more comprehensive groundwater management plan.

On page 4-17, the DSEIS assumes that detention basins would be present to control flow rates for discharges exceeding the retention capacity of LID features included in the project design. The DSEIS may be referring to detention basins described further down on page 4-17, but this should be clarified. In addition, Table 2.8-1 should include a summary of the operation and capacity of the LID features and accompanying detention basins that are included in the proposed action.

Ensuring Compliance with the Stormwater Construction General Permit (CGP)

We appreciate that that the DSEIS acknowledges there may be stormwater discharges to the ocean and that CGP coverage would be required and obtained. The statement in the DSEIS that the notice of intent (NOI) is not a permit application (p. 4-13) is incorrect, however, as an NOI is considered to be a permit application for a general permit.

Preparing documents such as the SWPPP and obtaining coverage under the CGP are important; but, in order to protect water resources, their implementation must be ensured throughout the construction phase. The original DEIS committed to various BMPs and compliance with local sediment and erosion control regulations and the CGP, and stated that impacts to surface water would be less than significant. In response to EPA's comments on the original DEIS, DoD asserted that "*enforcement of adequate erosion and sediment control measures and site specific BMPs would be aggressively maintained throughout construction*", and "*For construction projects at Apra Harbor or near water bodies, extra BMP measures would be provided along the site perimeter near the water (i.e. two lines of defense for sediment & erosion control instead of one sediment control BMP).*" Despite these commitments and assurances, EPA observed a large discharge of sediment from multiple storm water filtration systems, leaking cement wash-out containers, and inadequate sediment control BMPs in place during a Clean Water Act construction stormwater inspection in July 2013 while some of these projects, approved

Resources/ER-200434 and http://www.serdp.org/Program-Areas/Environmental-Restoration/Contaminants-on-Ranges/Protecting-Groundwater-Resources/ER-1229

under the original ROD, were under construction.

> *Recommendation:* Establish an enforcement framework and chain of accountability for the construction phase of the main cantonment. This is especially important, given that this project is much larger than those under construction during EPA's 2013 inspection. The FEIS should include an outline of the framework, including, at minimum, whom would be accountable, inspection schedules, and requirements for documentation of inspections and compliance actions.

Endangered Species Act (ESA) Requirements under the CGP

In our comments on the Preliminary DSEIS, EPA noted that discharge authorization under EPA's CGP for construction projects associated with the relocation would require a demonstration of compliance with the ESA before discharge authorization is granted. The DSEIS (p. 3-5) states that discharge authorization would be sought under Criterion E as described in Appendix D of the CGP and that the consultation with the U.S. Fish and Wildlife Service is ongoing. Consultation will need to be concluded before CGP coverage is granted, and DoD will need to comply with any necessary mitigation measures identified from the consultation.

We also requested additional information concerning plans for consultation with the National Marine Fisheries Service (NMFS) regarding species under its jurisdiction. The DSEIS acknowledges NMFS' recent proposed listing of numerous coral species, some of which are present in Guam coastal waters and may be affected by sediment from construction-related stormwater discharges, but continues to lack information regarding plans for consultation with NMFS.

> *Recommendation:* The FSEIS should discuss any plans for consultation regarding the coral species that have been proposed for listing and any other potentially affected species under the jurisdiction of NMFS to ensure compliance with the ESA.

Solid Waste

Green waste

The clearing of over 1,000 acres of secondary limestone forest and 140 acres of other vegetation for the preferred main cantonment alternative will result in the need to manage very large volumes of green waste. The DSEIS states that green waste generated during the buildup would be handled by the utilities and site improvements contractors at the designated laydown area located in the northeast corner of Finegayan near the Tactical Vehicle Gate and the Main Gate. The utilities and site improvements contractor would be required to divert all the green waste, with trees and stumps mulched and smaller-sized green waste composted (p. 4-110). The DSEIS also states that a proposed green waste processing facility at Naval Base Guam Landfill may also be used to process green waste generated during construction. The DoD will seek permit authorization from Guam EPA for the proposed green waste processing facility.

We are concerned that DoD is transferring too much responsibility to the utilities and site improvements contractor, and that sufficient pre-planning for the large amount of green waste has not yet occurred. In addition, processing green waste at the Navy landfill would involve transportation from Finegayan to Navy Base Guam, which would add traffic and air quality impacts that were not evaluated. We also stress the need for sufficient oversight of this operation. As noted in our stormwater comments, the

preparation of planning documents and commitments does not guarantee compliance in the field; effective oversight is essential.

> *Recommendation:* The FSEIS should confirm the plan and logistics for managing the volume of green waste. It should describe how DoD, as the owner of the prospective green waste facilities, would ensure sufficient planning by the utilities and site improvements contractor, and include mechanisms for ensuring compliance and oversight of green waste management and for development of permit technical documents in support of a permit application. DoD should ensure sufficient lead time for obtaining permits from Guam EPA and for constructing and operating compost or green waste facilities, since they appear critical for the management of the significant amount of green waste anticipated.

Use of DoD Landfills

The DSEIS indicates that the Navy landfill would be used to dispose/manage waste not accepted at Layon municipal solid waste landfill (MSWLF). In our comments on the Preliminary DSEIS, EPA inquired about the operating and permit status of the Navy landfill facilities, and about the Navy's prior plans for closure of those facilities. We appreciate that the DSEIS states that the proposed action would be consistent with any prospective permit terms and conditions, and that the Navy is coordinating with Guam EPA to ensure compliance of its landfill facilities. The DSEIS also references the continued use of the Anderson Air Force Base (AAFB) landfill facilities for solid waste not accepted at the Layon MSWLF. Please note that the operating and permit status of AAFB landfill facilities is not clear and should also involve coordination with Guam EPA to ensure that the proposed action would be consistent with the operating status of the landfill facilities and any prospective permit terms and conditions. EPA will continue to work with DoD and Guam EPA to provide technical and regulatory assistance on the Navy and Anderson landfill facilities, as needed and appropriate.

> *Recommendation:* Provide an update in the FSEIS regarding the status of the coordination with Guam EPA regarding the DoD landfill facilities and the timing for a new green waste processing facility at the Navy landfill.

Guam Zero Waste Plan

The DoD Office of Economic Adjustment funded the development of a comprehensive Guam Zero Waste Plan (http://www.one.guam.gov/zero-waste/plan.html) to plan for and mitigate solid waste impacts of the buildup through 2025; however, this information is not reflected in the DSEIS.

> *Recommendation:* Incorporate or reference the Zero Waste Plan and its recommendations in the FSEIS and confirm DoD's support for its implementation, in collaboration with GovGuam and Guam EPA.

Biological Resources

Mitigation for Significant Impacts

The preferred main cantonment alternative would clear over 1,000 acres of secondary limestone forest and over 140 acres of other vegetation from the Guam Overlay Refuge (p. 4-50). The DSEIS recognizes that limestone forests are important on Guam because they retain the functional ecological components of native forest that provide habitat for the majority of Guam's native species, including Guam- and federally-listed threatened and endangered species, as well as maintain water quality and reduce fire risk (p. 5-339). Nevertheless, approximately 977 acres of recovery habitat for the endangered Mariana fruit

bat would be removed under the preferred main cantonment alternative (p. 4-55) as well as 978 acres of recovery habitat for the extirpated Mariana crow, the Micronesian kingfisher, and the Guam rail (which the U.S. Fish and Wildlife Service (FWS) plans to reintroduce), thus reducing the total populations of these species the island can support (p. 4-57).

In addition to the main cantonment, the impacts to terrestrial biological resources from the preferred LFTR alternative would also be significant (p. 5-340), removing over 200 acres of limestone forest, including over 90 acres of valuable primary limestone forest (p. 5-339). Because the LFTR would impact the Guam National Wildlife Refuge managed by the FWS, in addition to the DoD-managed Overlay Refuge, impacts include removal of 12 acres of "critical habitat" for several endangered species under the Endangered Species Act, with impacts to an additional 200+ acres of critical habitat that would become inaccessible and possibly impacted by noise.

The DSEIS states that removal of this vegetation for the main cantonment and LFTR would be significant but mitigable. Mitigation includes forest enhancements on approximately 1,200 acres of limestone forest to include ungulate fencing, removal of non-native vegetation, and planting native species (p. 4-52, 5-340). To mitigate for the loss of the overlay refuge conservation areas, DoD would designate 553 acres of forest in the NAVMAG as an Ecological Research Area and expand the Orote ERA by 32 acres (p. 4-54).

While we defer to the FWS for determination as to whether the proposed mitigation is sufficient for impacts of such magnitude, we are concerned that mitigation proposed on DoD land would be subject to future development impacts. The project proposes to develop the LFTR in areas that have been set aside to mitigate previous project impacts; for example, the LFTR would remove the ungulate enclosure being constructed as mitigation for previous Air Force actions on AAFB in accordance with a FWS Biological Opinion (p. 5-329). In addition, the LFTR largely occurs in a conservation area from previous FWS consultations (Figure 5.5.8-2). The mitigation proposed does not appear to replace these mitigation areas in addition to providing mitigation for this project's impacts. The cumulative impacts analysis for terrestrial biological resources indicates a serious decline of terrestrial biological health on Guam (p. 7-78). The significant impacts from the proposed projects, in addition to the loss of areas serving as mitigation for other projects' impacts, warrants a robust mitigation proposal that would restore or conserve resources in perpetuity.

> *Recommendation:* Continue to work with FWS to develop a more substantial mitigation proposal. We recommend establishing conservation areas on lands that would not be subject to future DoD development. Identify a mechanism where this could occur, such as the transfer of DoD property to a third party for conservation purposes or the purchase of private property and transfer to a conservation organization or agency for preservation in perpetuity. We note that Barrigada includes almost 100 acres of primary limestone forest and some wetlands that are valuable resources for protection.

Alternative B, D are environmentally preferable

EPA continues to strongly recommend that DoD consider the use of South Finegayan for family housing, as represented in main cantonment Alternative B, in order to reduce significant impacts to terrestrial biological resources. Alternative B would redevelop existing unutilized housing in South Finegayan and would save almost 200 acres of secondary limestone forest that would be removed under Alternative A (p. 4-38, p. 4-157). In addition, Alternative B would reduce new impervious surface by 100 acres over Alternative A and would be located further from nearshore environments and Haputo

Beach, offering a larger buffer. Preserving forest also helps protect the groundwater in the NGLA and preserves the carbon sequestration that would otherwise be lost from the deforestation.

Locating the main cantonment at Barrigada (Alternative D) would spare 757 acres of limestone forest over the preferred alternative. This would go a long way towards reducing impacts.

> *Recommendation:* Consider the serious decline of terrestrial biological health on Guam and select an alternative that would reduce impacts while also meeting the purpose and need of the project. Alternative D should be considered for the main cantonment. At a minimum, Alternative B should be selected over the preferred alternative since it is very similar but with fewer impacts.

Impacts to the Haputo Ecological Reserve Area (ERA)

The family housing under Alternative A would be located on the cliff at an elevation of 360 feet and 0.1 mile from Haputo Beach. We appreciate that the project proposes a 100 foot vegetated buffer from Haputo plus a 200 foot landscape buffer, however we believe a larger buffer with natural vegetation would be more protective. The DSEIS acknowledges that the plant cover at Finegayan protects the thin soils from erosion (p. 4-5). Preserving the natural vegetation is more protective and reduces the risk of introducing fertilizers or pesticides to the near-shore environment. The DSEIS states that avoiding pesticides and fertilizers would be *considered* to protect water quality (p. 4-16); however this would be difficult to enforce.

> *Recommendation:* We strongly recommend that a larger vegetated buffer be used for the family housing area. This could be accomplished by using the higher density of 6 housing units per acre (the DSEIS states that the density would be 4-6 units per acre). We also continue to recommend the use of Finegayan South for housing, as it is disturbed land and would not involve development so close to the valuable coral resources at Haputo.

Biosecurity

Any additional movements of personnel or supplies increases the risk of further spread of the invasive brown tree snake; therefore, ensuring sufficient biosecurity must be a top priority. The DSEIS states that the Navy will follow standard Navy biosecurity protocols regarding detection and management of non-native species and that the Navy agrees that it will fund the increase of current federally funded brown treesnake interdiction measures (in Guam, CNMI, and Hawaii) where the increase is related to direct, indirect and induced growth caused by the Marine Corps relocation to Guam (p. 4-55).

> *Recommendation:* Continue to consult with FWS to ensure biosecurity is sufficient for the project. Provide an update on this consultation in the FSEIS.

Recreation

The DSEIS is inconsistent in its evaluation of impacts to recreation from the LFTR. On page 5-328 it states that there will be a less than significant impact on recreation from the preferred Alternative 5. Impacts include eliminating access to public hiking trails and accessible caves for 39 weeks of the year. The environmental justice analysis on p. 5-383 concludes that "the access restrictions resulting from implementation of Alternative 5 would result in significant impacts to recreational resources and the need to relocate the USFWS Nature Center. In addition to access restrictions, there are potential indirect impacts from firing range noise, which could lessen visitor enjoyment of recreational resources in the area and affect uses by private landowners at Jinapsan Beach". Table 5.7-1 again lists a less than

significant impact for the preferred Alternative 5.

Recommendation: Correct the discrepancies in the conclusions for impacts to recreational resources associated with the LFTR. Based on the described access restrictions, it appears impacts would be significant.